Attorney Docket No: IDF 1541 (4000-02100)                                    *Patent*

## REMARKS

The Office Action mailed February 27, 2006, and the references cited by the Examiner have been carefully reviewed by Applicants. Claims 1-21 are pending in this case. Applicants submit that, for the reasons discussed below, the pending claims are in condition for allowance, and Applicants earnestly seek such allowance.

## Interview Summary

A telephone interview was conducted with Examiner Douglas Blair and Applicants' attorney Elizabeth Pham on May 24, 2006. Applicants would like to thank Examiner Blair for his time and consideration in this matter. The differences between the elements of Claim 1 and the Chiang et al. reference (U.S. Patent 6,948,174) were discussed. In light of the interview, Examiner Blair asked that a few areas be clarified in the present amendment. Specifically:

1.    What is middleware and how is it described in the present specification?

Applicants respectfully submit that the present specification describes middleware and its advantages as follows:

> [0002]    Computer systems operating under heterogeneous platforms cannot always exchange data directly among themselves. Numerous types of commercially available products known collectively as middleware have been developed to facilitate data exchange between disparate computer systems. Instead of communicating directly with each other, computer systems can send data in their native format to the middleware. The middleware then sends the data to another system in a format understandable by the second system. Among the categories of middleware are message-oriented middleware and object request brokers.
>
> [0003]    If a middleware product is not used, a heterogeneous computer system would typically need to operate in a point-to-point mode, for example using message queuing as point-to-point. Under the point-to-point approach, illustrated in Figure 1, if six separate and distinct applications 120, 122, 124, 126, 128, and 130 are to communicate, connections 101-115 must be made between every possible pair of systems. This type of configuration is undesirable for several reasons. First, the number of connections is large. The number of

6

connections required in a system of *n* components is $(n^2 - n)/2$. For example, a six component system such as that in Figure 1 requires $(36 - 6)/2$ or 15 connections. Second, the point-to-point mode requires tight coupling between each pair of platforms. That is, if each type of technology uses its own data format, a specifically designed adapter is needed between each pair to allow communication between the two. Third, the point-to-point approach creates vendor dependency. The adapters between platforms must meet the requirements of the manufacturers of each system. If a piece of equipment is replaced, the adapters between the new equipment and all other systems must be redesigned.

[0004]    The use of middleware allows computer systems to operate in a broker mode, sometimes referred to as a hub and spoke configuration. This approach, as illustrated in Figure 2, is an improvement over the point-to-point approach. In this configuration, each application **220, 222, 224, 226, 228,** and **230** communicates only with the broker **232** thereby reducing the number of connections **201–206** needed. For example, this six-application system would require only six connections, numbered 201–206, as opposed to the fifteen needed for six applications connected in the point-to-point mode. Message-oriented middleware products operating in the publish/subscribe mode are an example of brokering middleware. Since these products can typically send and receive data in the native data formats of the applications they connect, adapters are typically not needed to convert data from the format of the applications to the format of a publish/subscribe engine serving as the brokering hub. This reduces vendor dependency and increases system flexibility over the point-to-point approach.

Accordingly, the advantages the hub and spoke configuration using middleware, as opposed to the point-to-point mode using adapters, is that the number of connections between the applications is reduced, the dependency on the vendor is reduced, and the flexibility of the system is increased.

2.    How is the runtime connector of Chiang et al. distinguished from the middleware brokering server of the present invention?

Applicants respectfully submit that, by contrast, the runtime connector of Chiang et al. is used to match the interface requirements of an adapter and a legacy application. (Col. 11, lines 57-58.) The novelty of Chiang et al. lies in the use of Interface Definition Languages within connectors to enable collaboration between dissimilar applications without hard coded

7

application program interfaces. (Col. 2, line 67 – Col. 3, line 3.) The Common Application Metamodel (CAM) tool, method, and system of Chiang et al. provide a data transformer that is bi-directional between a client application and a server application. (Col. 3, lines 44-47.) As shown in FIG. 7 of Chiang et al., the bi-directional data transformation between the client application and the server application is accomplished by using the Application metadata stored in metadata repository 709. (Col. 10, lines 45-65.) Thus, Chiang et al. provides integration between the middleware and the enterprise applications without hard coded application program interfaces. Chiang et al. does not teach or suggest integration between one middleware service and another.

Although middleware products can be used to allow heterogeneous computer systems to communicate with each other, communication cannot necessarily be established directly from one of these middleware products to another. In a computer system using more than one of these middleware services, applications that communicate with each other through one service would typically not be able to communicate with applications connected to another service. For example, applications that use MQSeries would typically not be able to communicate with applications using JMS. Likewise, CORBA applications would typically not be able to communicate with either MQSeries or JMS applications. The middleware brokering server of the present invention solves this problem by acting as an intermediary between the middleware services in a manner analogous to the way the middleware services themselves act as intermediaries between disparate individual computer systems.

8

Attorney Docket No: IDF 1541 (4000-02100)                                    *Patent*

## Response to Rejections under Section 102

In the Office Action dated February 27, 2006, Claims 1, 6-7, and 11-16 were rejected under 35 U.S.C. §102(e) as being anticipated by Chiang et al. (U.S. Patent 6,948,174).

Claim 1 recites, "receiving the message sent from the first middleware computing system into a middleware brokering server."

By referring to the description of FIG. 7 in Col. 10, lines 46-61 of Chiang et al., the Office Action appears to suggest that FIG. 7 of Chiang et al. shows a middleware brokering server receiving a message from a first middleware computing system. However, the only component that receives messages from middleware 713 in FIG. 7 is runtime connector 701. Runtime connector 701 acts as an intermediary between application program 703 and middleware 713. By contrast, the middleware brokering system of the present application acts as an intermediary, or meta-middleware, device among the different middleware systems. Runtime connector 701 is not an intermediary among different middleware systems and does not fulfill the need for computer systems operating under disparate types of middleware to communicate with one another in an efficient, verifiable, flexible, and maintainable manner.

Accordingly, Applicants respectfully submit that Chiang et al. does not teach or suggest a middleware brokering system, and does not teach or suggest receiving a message sent from a first middleware computing system into a middleware brokering server.

Claim 1 also recites, "sending the message from the middleware brokering server to a second middleware computing system that receives the message."

The Office Action also appears to suggest that FIG. 7 of Chiang et al. shows a middleware brokering server along with a second middleware computing system. For the reasons established above, Applicants respectfully submit that Chiang et al. does not teach or

9

suggest a middleware brokering server. Applicants also respectfully submit that FIG. 7 only shows one middleware computing system because Chiang ct al. teaches integration between a middleware computing system and enterprise applications. It does not teach or suggest integration between two or more disparate middleware computing systems. Therefore, it does not teach or suggest a second middleware computing system.

Accordingly, Applicants respectfully submit that Chiang et al. does not teach or suggest a middleware brokering system or a second middleware computing system, and does not teach or suggest sending a message from a middleware brokering server to a second middleware computing system that receives the message.

Claim 1 further recites, "sending the message from the second middleware computing system to a second application that receives the message."

The Office Action also appears to suggest that FIG. 7 of Chiang et al. shows a second middleware computing system sending a message to a second application. For the reasons established above, Applicants respectfully submit that Chiang et al. does not teach or suggest second middleware computing system, much less a second middleware computing system sending a message to a second application.

Accordingly, Applicants respectfully submit that Chiang et al. does not teach or suggest a second middleware computing system, and does not teach or suggest sending a message from a second middleware computing system to a second application that receives the message.

Dependent Claims 6-7 and 11-16 depend directly or indirectly from independent Claim 1 and incorporate all of the limitations thereof. Accordingly, for the reasons established above, Applicants respectfully submit that Claims 1, 6-7, and 11-16 are not anticipated by Chiang et al. and respectfully request allowance of these claims.

10

Attorney Docket No: IDF 1541 (4000-02100) *Patent*

### Response to Rejections under Section 103

In the Office Action dated February 27, 2006, Claims 2-5, 8-10 and 17-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chiang et al. (U.S. Patent 6,948,174).

Dependent Claims 2-5, 8-10 and 17-21 depend directly or indirectly from independent Claim 1 and incorporate all of the limitations thereof. Accordingly, for the reasons established above, Applicants respectfully submit that Claims 2-5, 8-10 and 17-21 are not obvious in light of the suggested combination and respectfully request allowance of these claims.

### Conclusion

Applicants respectfully submit that the application in its present form is in condition for allowance. If the Examiner has any questions or comments or otherwise feels it would be helpful in expediting the application, Examiner is encouraged to telephone the undersigned at (972) 731-2288. Applicants intend this communication to be a complete response to the Office Action mailed on February 27, 2006.

The Commissioner is hereby authorized to charge payment of any further fees associated with any of the foregoing papers submitted herewith, or to credit any overpayment thereof, to Deposit Account No. 21-0765, Sprint.

Respectfully submitted,

CONLEY ROSE, P.C.

Date: 5/26/2005

5700 Granite Parkway, Suite 330
Plano, Texas 75024
Telephone: (972) 731-2288
Facsimile: (972) 731-2289

Michael W. Piper
Reg. No. 39,800

ATTORNEY FOR APPLICANT

11

P.12